

U.S. Patent Application Serial No. 10/662,450
Amendment filed January 19, 2006
Reply to OA dated October 19, 2005

REMARKS

Claims 9-12 are pending in this application. Claim 9 is amended herein. Upon entry of this amendment, claims 9-12 will be pending. Entry of this amendment and reconsideration of the rejections are respectfully requested.

No new matter has been introduced by this amendment. Support for the amendment to claim 9 may be found in the specification at page 11, line 31, to page 12, line 5, and in originally filed claim 8.

General comments

The Office action summary incorrectly lists claims 1-14 as pending in this application, and the rejections are directed to claims 1-14. However, claims 9-12 are pending, as of the Preliminary Amendment filed on September 16, 2003.

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Snyder et al. (US 6,554,467). (Office action page 2)

The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

The amendment to claim 9 adds the step of: “setting an initial mixing amount of the oxidizing agent less than the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry”.

In the claimed invention, an initial mixing amount of the oxidizing agent is set, or calculated,

so that it is less than the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry. Accordingly, advantage (3) described on page 14 of the specification can be obtained.

In the text of the rejection, the Examiner discusses the apparatus limitations of the canceled claims, with no explicit discussion of the method limitations of claims 9-12. Applicant notes that, in Snyder's process, slurry, hydrogen peroxide and surfactant are added to blending tank 102 (column 3, line 60, to column 4, line 12). This addition appears to be based on "preset weights".

In column 5, line 46, Snyder discloses that "the concentration of hydrogen peroxide in the oxide abrasive slurry is measured by a concentration sensor 148". In addition, in column 6, lines 4-9, the reference discloses that "concentration sensor 156 may optionally be employed in the Winkelman loop to monitor the concentration of this component [hydrogen peroxide] in the slurry solution to ensure that it is maintained within specification limits." This is in response to the fact that the hydrogen peroxide is known to decompose with time.

However, Snyder does not disclose or suggest the step of "setting ..." as recited in amended claim 9. Rather, Snyder appears to suggest setting of an initial mixing amount of the oxidizing agent **equal to** the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry. In Snyder, the concentration of an oxidizing agent, such as hydrogen peroxide, is lowered **due to decomposition**.

Claims 9-12 are therefore not anticipated by, and further are not obvious over, Snyder et al. (US 6,554,467).

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Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawashima (US 6338671). (Office action page 4)

The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

Applicant respectfully notes that Kawashima '671 is **not** prior art under 35 U.S.C. 102(b), since Kawashima '671 was published on January 15, 2002, and the present application is a divisional of an application filed on October 29, 2002. Kawashima '671 is prior art under 35 U.S.C. 102(e) as of its filing date of March 24, 2000.

Applicant notes that the reference does not appear to generally disclose use of an “oxidizing agent”, and the addition of hydrogen peroxide or potassium permanganate (which are oxidants) is mentioned only once, in column 5, line 64, in which “a small amount” is added to the polishing liquid, and the oxidation-reduction potential measured by electrode 78. Kawashima '671 therefore does not disclose or suggest the step of “setting an initial mixing amount of the oxidizing agent less than the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry” as recited in amended claim 9.

Claims 9-12 are therefore not anticipated by, and further are not obvious over, Kawashima (US 6,338,671).

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Snyder US Publication no. 2002/0085447. (Office action page 6)

The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

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Applicant respectfully notes that Snyder '447 is **not** prior art under 35 U.S.C. 102(b), since Snyder '447 was published on July 4, 2002, and the present application is a divisional of an application filed on October 29, 2002. Snyder '447 is prior art under 35 U.S.C. 102(e) as of its filing date of February 9, 2001.

Applicant notes that this reference is the publication of the application (09/779,740) that was patented as Snyder, US Patent no. 6,554,467. The disclosure is essentially the same as that of the patent. Therefore, Applicant's above remarks with regard to overcoming the rejection over Snyder '467 (Office action page 2) are applicable here.

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Lai (US 6,721,628). (Office action page 8)

The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

Applicant respectfully notes that Lai et al. '628 is **not** prior art under 35 U.S.C. 102(b). Lai et al. is prior art under 35 U.S.C. 102(e) as of its filing date of July 28, 2000.

The Examiner addresses the apparatus limitations of claims 1-8, which are not pending in this application. The Examiner refers to claim 6 of the reference as disclosing an oxidizing agent, and to claim 7 as disclosing a concentration detector.

Applicant notes that Lai et al. discloses a closed loop concentration control system for a polishing slurry. The system analyzes whether the quantity of oxidant is sufficient, and if the quantity is insufficient, a supplementary quantity of oxidant is transmitted into the distribution tank

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(abstract).

However, Lai et al. does not disclose or suggest the step of “setting an initial mixing amount of the oxidizing agent less than the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry” as recited in amended claim 9. Rather, the reference appears to suggest setting of an initial mixing amount of the oxidizing agent **equal to** the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry.

Claims 9-12 are therefore not anticipated by, and further are not obvious over, Lai et al. (US 6,721,628).

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawashima (US 2001/0002361). (Office action page 9)

The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

Kawashima '361 discloses a polishing liquid supply apparatus, and in the described process, an oxidizing agent such as hydrogen peroxide is added as an additive to the polishing liquid (paragraph [0010]). The reference indicates that it is known that the oxidizing agent is unstable. Kawashima '361 discloses in paragraph [0017] that the apparatus has a sensor for detecting the concentration of the additive (i.e., oxidizing agent), and a controller for controlling the additive quantity adjusting device in response to an output signal from the sensor.

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However, Kawashima '361 does not disclose or suggest the step of “setting an initial mixing amount of the oxidizing agent less than the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry” as recited in amended claim 9. Rather, the reference appears to suggest setting of an initial mixing amount of the oxidizing agent **equal to the** amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry.

Claims 9-12 are therefore not anticipated by, and further are not obvious over, Kawashima (US 2001/0002361).

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawashima (U.S. 6,358,125). (Office action page 12)

The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

Applicant notes that Kawashima '125 is the patent arising from application no. 09/724,999, which is the application corresponding to the publication Kawashima '361, discussed above. The disclosures of Kawashima '125 and Kawashima '361 are essentially the same, and Applicant's remarks regarding how the amendment to claim 9 overcomes the rejection over Kawashima '361 are applicable to the present rejection.

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiraoka (U.S. 6,874,929). (Office action page 15)

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The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

Applicant respectfully notes that Hiraoka '929 is **not** prior art under 35 U.S.C. 102(b). Hiraoka '929 is a divisional of application no. 09/050,947, filed on March 31, 1998, and is nominally prior art under 35 U.S.C. 102(e) as of that date.

As noted above, the amendment to claim 9 adds the step of: “setting an initial mixing amount of the oxidizing agent less than the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry”. Hiraoka '929 does not disclose or suggest the step of “setting ...” as claimed. Rather, the reference only suggests setting of an initial mixing amount of the oxidizing agent **equal to** the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry.

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiraoka (U.S. 2005/0142883). (Office action page 15)

The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

Applicant respectfully notes that Hiraoka et al. '883 is **not** prior art under 35 U.S.C. 102(b). This is a U.S. patent publication of an application which is a divisional of the application that matured into Hiraoka '929, originally filed on March 31, 1998, and is nominally prior art under 35 U.S.C. 102(e) as of that date.

As noted above, the amendment to claim 9 adds the step of: “setting an initial mixing amount of the oxidizing agent less than the amount required for the oxidizing agent to match a target

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concentration of the oxidizing agent in the slurry". The Examiner notes that the reference discloses an oxidizing agent, such as ferric nitrate, in paragraph [0027]. However, Applicant notes that the first stock solution (slurry) and second stock solution 16 (oxidant) are added in predetermined amounts (paragraph [0094]).

Hiraoka '883 does not disclose or suggest the step of "setting ..." as claimed. Rather, the reference only suggests setting of an initial mixing amount of the oxidizing agent **equal to** the amount required for the oxidizing agent to match a target concentration of the oxidizing agent in the slurry.

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiraoka (U.S. 2002/0186613). (Office action page 22)

The rejection of pending claims 9-12 is overcome by the amendment to claim 9.

Applicant respectfully notes that Hiraoka et al. '613 is not prior art under 35 U.S.C. 102(b), but is nominally prior art under 35 U.S.C. 102(e). Applicant also notes that Hiraoka '613 is a publication of an application that is a sibling of the applications for Hiraoka et al. '883, and Hiraoka '929, discussed above, and the disclosures of these documents appear to be essentially the same. Applicant's remarks regarding how the amendment to claim 9 overcomes the rejection over Hiraoka '883 are therefore applicable to the present rejection.

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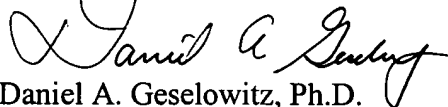
In view of the aforementioned amendments and accompanying remarks, the claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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